Alternative EX-3.1

Group
Water Supply

Title
Soft Path Approach

"Hard path" approaches can be characterized by an emphasis on the expansion of water diversions, improvements in water quality, or mitigation for past damage using facilities and actions which intrude upon the natural workings of the environment. By contrast, "soft paths" seek to restore natural functions and to reduce human manipulation of those functions. This alternative, while focussing on changing flow and diversion patterns, takes a "soft" approach.

The distinction between hard and soft paths is not always clear in the Bay-Delta system. The system is already heavily managed and the Delta environment and species mix has already been highly distorted over the last century. For purposes of this alternative, "hard" elements are considered to be facilities or actions which further distort "natural" processes. Soft elements are those which reduce human intrusion into the environment. Thus, "hard" elements would include:

- o Conveyance facilities which distort natural flow patterns (e.g., new Delta transfer facilities).
- o Storage facilities which major site specific impacts (e.g., surface storage, especially on-stream storage).
- o Hatcheries.

Soft elements would include measures which seek to:

- o Restore and protect natural flow patterns -- higher spring Delta outflow, fewer reverse flows, etc.
- o Reduce overall diversions from the system -- conservation, reclamation, water transfers, cropping shifts.
- o Reduce the impact of remaining diversions -- screening and real time management.
- o Restore habitat.
- o Reduce other human impacts on the system -- ballast requirements, water quality, etc.

Some actions may be a mixture of hard and soft paths. For example, increases in spring outflow (soft) might be generated through new facilities and reductions in high flows (hard).

This alternative emphasizes the various "soft" elements discussed above. It does include several harder elements, however such as Delta island storage and new conveyance in the south-west San Joaquin Valley. These facilities believed justified because they reduce the effect of past engineering choices on the natural system in ways that are relatively unintrusive.

Key Actions

Demand management— Cap average diversions from the Bay-Delta tributaries and from the Delta at current levels. Require demand management measures adequate to assure that this

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level of diversion will meet future needs. Demand management would include the appropriate mixture of the following measures:

Conservation. Improve implementation of urban Best Management Practices (BMPs). Tighten BMPs to require inclining block rate pricing (designed to reduce landscape water use). Implement agricultural Efficient Water Management Practices (EWMPs). EWMPs including: measurement of deliveries; pricing and incentives designed to optimize management (efficiency of use, conjunctive use), grower access to markets.

Reclamation. Includes both urban and agricultural supplies. Urban options include local non potable use, potable reuse, and urban-agricultural water exchange.

Land Retirement. Fund retirement of significant amounts of land south of the Delta. Emphasize lands which contribute to drainage and water quality problems.

Water Transfers. Create a transfer clearinghouse to facilitate the movement of water from willing buyers to willing sellers. Reduce transaction costs by developing criteria for fast track transfers. Buyers willing to abide by the criteria for fast track transfers (timing, source of water, mitigation) would face minimal regulatory requirements for transfer, including transfer from north to south of the Delta.

In-Delta storage facilities— Convert several Delta islands south of the San Joaquin River into facilities capable of storing 2 - 300,000 acre-feet of water (e.g., Bacon Island and Webb Tract). The storage would be controlled by environmental agencies. This element is arguably "soft" in the sense that the islands are probably not sustainable in the long-term in present land uses due to continued subsidence. Nor would failure of the island promote restoration due to their depth (-20 feet). The on-site impact of the islands for storage, therefore, should have no major long-term adverse environmental impacts. On the other hand, use of the island for storage allows for amelioration of current export impacts (see "Operations").

Delta channel capacity improvement— The capacity of channels in the southern Delta would be increased to allow use of the export pumps at their full 15 kcfs capacity. This element is "hard" in appearance. However, the increased export capacity would be used to shift pumping timing away from environmentally damaging period to lower impact periods.

Ground water storage south of the Delta— Groundwater storage in the west and southern San Joaquin Valley will be used more actively for storage purposes. Direct percolation will be used to bank water supplies. Also, in lieu conjunctive use programs (higher deliveries of surface supplies in wet years, lower deliveries in dry years) will be greatly expanded. This expansion may require a restructuring of state and federal contracts and/or new conveyance/ distribution facilities. The new storage would be controlled by environmental agencies.

Delta island screening— Fund existing DFG screening mandates to cover all high priority screening sites.

Barriers— Install an acoustic barrier at Georgiana Slough. Install a barrier at Old River. Install barriers in the South Delta to protect agricultural water quality.

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Habitat restoration— Habitat restoration elements above the core elements would include:

Fully fund the restoration mandates of the CVPIA.

Restore a certain acreage (e.g., 20,000 acres) within the Delta to natural habitats, including shallow, riparian, shaded riverine, and wetland.

Operations/ Standards— Changes in current operational patterns/standards will be made in the following areas:

- Real time management. Monitoring and real time operations will be implemented intensively with the goal of reducing diversion impacts on the environment while retaining water supply reliability. As with the Operations Group currently, real time management could include exports at levels above the nominal standards, if coupled to reductions in exports at other times sufficient to provide a net environmental benefit.

- Environmental Storage. Environmental agencies would control the storage in the Delta islands and in new groundwater storage south of the Delta. Decisions on when to fill and when to release would be made at their discretion, subject to overall guidelines. One guideline would mandate that the top priority for use of the storage must be to avoid interruptions in export supplies due to take limits (both prospectively and retrospectively). In general, water could be released for environmental purposes (e.g., to boost outflows), exchanged (e.g., turned over to the export projects in return for lower export rates), sold (to generate additional money for various environmental purposes), or used to guarantee real time operations in which the environment accepts a debt to water users. Examples of likely operations would include:

    - Use of storage to reduce exports below 35% of inflow.
    - Use of storage to reduce exports below 100% of San Joaquin inflow during April and May (or to provide a substitute source of water for the pumps from the islands, thereby reducing the damage caused by export pumps).

- New Standards. A new salinity X2 compliance point in San Pablo Bay structured to assure that an adequate frequency of pulse flows are allowed to flow into San Francisco Bay. The increased south Delta export capacity would be subject to new export standards limiting the time of use to high flow periods.

- Barriers. Give environmental agencies control over the Delta Cross Channel barrier from November -- June. In general, the DCC will remain closed during this period unless environmental agencies are confident that downmigrating salmon smolts are not present or that the barrier should remain open to reduce reverse flows. Operate the Old River barrier during April-May outmigration pulses.

Levee upgrades— Provide landside buffer zones of 20 to 50 yards to minimize levee subsidence for islands providing valuable existing habitat, such as on Bradford Island. Improve levee maintenance and stabilization to at last hazard mitigation plan standards (HMP; a level

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of protection less than the 100-year flood) for all islands, such as Tyler and Mandeville, containing existing infrastructure and/or land use that provide economic benefit to the region. Improve levee maintenance and stabilization to a t least National Flood Insurance Program standards (NFIP; 100-year flood protection) for critical western Delta islands, such as Brannan-Andrus, Bethel, and Sherman, to reduce risk to critical infrastructure (e.g., Mokelumne Aqueduct, PG&E gas lines, highway 160) and to reduce risk to export water quality from salinity intrusion due to levee failure. A levee management plan would provide necessary funding for ongoing maintenance and emergency funding and direction to reclaim Delta islands in the event of inundation in order to continue protection of Delta functions as an integrated resource system.

Funding— A significant fraction of the funding for this alternative would probably need to come from state or federal level sources in order to satisfy the equity criterion.

Preliminary Assessment

Ecosystem Quality—This alternative would provide moderate improvements in environmental quality. Average demand would be capped at current levels and seasonal diversion patterns would be shifted toward times of lower impacts. Real time management, the operation of various barriers, a moderate level of habitat restoration, and the water quality core actions would also promote environmental health. However, the level of benefit is probably limited by the continued existence of significant entrainment impacts at the south Delta pumps, limited improvements in spring outflows, and a level of habitat enhancement which is lower than alternatives more focussed on habitat enhancement. It would be possible to develop other "soft path" alternatives which provide more environmental protection by further reducing demand or increasing the amount of habitat restoration -- at a higher cost.

Water Supply—This alternative would improve the reliability of water supplies (at current levels) by improving real time management techniques, requiring new storage to be used first for responding to ESA take problems, by reducing the transaction costs for water transfers, and by increasing the proportion of reclaimed water (a highly reliable source) in the supply mix. Various demand side measures would assure that net demand for Delta water does not rise in the future. Constant demand for Delta should keep supply conditions from deteriorating in the future. However, as a result of "demand hardening", the reliability of supply should increase as efficiency increases if the damage from shortages is to be kept constant. This alternative does not provide for such increases, though the market should allow for some adjustment. In the long term, if urban growth continues, either very expensive reclamation programs would be necessary or large amounts of export agriculture would go out of production.

Water Quality—Water quality for users is the weakest element of this alternative. The core elements, and agricultural land retirement should improve the quality of water entering the Delta. Barriers in the south Delta should improve quality for agriculture there. However, more frequent Delta Cross Channel closures and the use of storage from Delta islands will lower water quality for Delta agriculture and for export. Water quality should remain adequate for Delta farming and export agriculture. However, the cost of treatment of exports drinking water will probably remain at least at currently projected levels, if not above them.

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System Vulnerability—This alternative provides significant improvements in levee stability. Significant risks of major levee failures remain, however, posing risks to in-Delta water users, in-Delta habitat and export supplies. The south of Delta storage and in- Delta storage would both tend to reduce the consequences of major levee failure to export areas somewhat.

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